

**REMARKS**

The Office Action dated May 31, 2005, has been carefully reviewed and the following remarks are made in consequence thereof.

Claims 1-19 remain active in this application.

The Examiner rejected claims 1-19 under 35 U.S.C. 103(a) as being unpatentable over Samuelson et al. (6,018,018) in view of Akkara et al. (Hematin catalyzed polymerization of phenol compounds).

Samuelson et al. teaches the polymerization of aromatic compounds in the presence of different templates using the enzyme Horseradish peroxidase (HRP). The pH (Column 3 line 57) for the reactions is in the range of pH 4 -10. HRP is not active/stable between pH 0.5 and 4. Consequently HRP cannot be used at very low pH to polymerize any monomers. The catalytic system taught by Applicants' claims 1- 19 is based on derived hematin and is distinctly different from HRP in the ability to retain catalytic activity in low pH (0.5 to 4), and thus, Applicants teach increasing the range of pH for the aromatic polymerization.

Akkara et al. describes the polymerization of aromatic compounds in the presence of hematin. The pH of Akkara et al. for the reactions is in the range of pH 3.5 -7.5. However, hematin is not soluble in pH lower than 6.0, and consequently not active between pH 0.5 and 4. The system of Applicants' claims 1-19, comprising a derived hematin (wherein the hematin catalyst has been derived with one or more non-proteinaceous amphipathic groups) is completely soluble and active at low pH, thus increasing the range of pH for the aromatic polymerization.

Applicants assert that the derivation of hematin using poly(ethylene glycol) chains is a crucial step for the use of the catalyst at extreme low pH. Applicants' discovery opens new and unobvious avenues for the polymerization of aromatic compounds.

Thus, Applicants respectfully aver that claims 1-19 would not be obvious to one skilled in the art over Samuelson et al. on view of Akkara et al.

In view of the foregoing remarks, it is believed that Claims 1-19 in this application are allowable and Notice to that effect is respectfully solicited.

Should the Examiner wish to contact Applicants' attorney regarding this application, the Examiner is respectfully invited to do so by calling or writing the undersigned in the Office of Counsel, U.S. Army Soldier Systems Center, Natick, MA 01760 at (508) 233-4510.

Respectfully submitted,

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Date

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